

## ABSTRACT OF THE DISCLOSURE

The invention includes a deposition system having a reservoir for containment of a metastable specie connected to a deposition chamber. The system includes a metastable specie generating catalyst within the reservoir. The invention also includes an atomic layer deposition apparatus having a deposition chamber that contains a substrate platform, first and second inlets and a dispersion head positioned between the inlets and the substrate platform. The ALD apparatus includes first and second metastable specie containment reservoirs in fluid communication with the deposition chamber through the inlets. One or more sources of carrier gas are configured to deliver carrier gas through at least one of the inlets. The invention also includes an atomic layer deposition method.